

an important pollinator of *Oenothera caespitosa* and may be regarded as a pollen thief.

Although evening observations were not conducted it is probable that this flower is pollinated by nocturnal hawkmoths as previously reported (ibid.). The stigmas of all plants examined contained noticeable amounts of pollen. The early-morning oligoleges of the genus *Andrena* (*Onagrandrena*) found by Linsley, et al. (ibid.) were not present on the study site.—V. J. TEPEDINO, *Department of Zoology and Physiology, University of Wyoming, Laramie, Wyoming 82071.*

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**Insect Associates (Diptera: Chironomidae, Sphaeroceridae) of *Darlingtonia californica* (Sarraceniaceae) in California.**—In June, 1974, I had the opportunity to study specimens of *Darlingtonia californica* Torrey, the California pitcher-plant, in Nevada County, California, near Willow Springs. The plants were growing along the stream margins at 6500 feet elevation in a sphagnum bog surrounded by pine-fir forest. In view of the presumably digestive nature of the fluids contained in the pitchers (Street, H. E. and H. Opik. 1970. *The Physiology of Flowering Plants: Their Growth and Development.* American Elsevier Publishing Co.: New York, N. Y. 263 pp.), it was of interest to find two species of dipterous larvae living and developing in the upper layer of reddish fluid above the insect debris in the pitchers. One species was a chironomid midge, apparently *Metriocnemus edwardsi* Jones, the other a sphaerocerid in the genus *Leptocera*. I am indebted to Dr. E. I. Schlinger of the University of California, Berkeley, for his identification of the flies.

The chironomid larvae were abundant in 15–20 pitchers examined in the field. They appear to be detritus feeders, but may be herbivores. The larvae stayed near the top of the detritus. Jones found *M. edwardsi* larvae eating insect remains in plants in Siskiyou County, California, and reported that in captivity specimens pupated on the outside of the pitcher, on the basal portion of the leaf or on adjacent moss (Jones, F. M. 1916. *Entomol. News* 27: 385–392). Jones was convinced, by the presence of larvae in almost every suitable *Darlingtonia* leaf, that the larvae were habitually and possibly exclusively associated with it. To my knowledge, *M. edwardsi* has never been reported from any host other than *D. californica*, nor from outside California, although the plant occurs in Oregon. Because of the uniqueness of the habitat utilized, it seems quite unlikely that the same species of chironomid would be found in other aquatic situations in the same area. Although there are 17 described species of *Metriocnemus* in North America, *M. edwardsi* is the only one as yet described from California. The rest are northern in distribution.

The *Leptocera* larvae were more numerous than the chironomids. These crawl up the walls of the pitchers, and pupate among the retrorse hairs found in the lower portion of the tube. Adult *Leptocera* were also found in the pitchers. Some are probably caught by spiders, such as the eriogonids found in some of the atria at the tops of the plants, while others escape and colonize new pitchers. Various species of *Leptocera* are commonly found among low plants in this type of boggy area. This particular species has apparently been able to adapt completely to the conditions in the pitchers, and is probably limited to *Darlingtonia*.

It is interesting that the eastern genus of pitcher-plant, *Sarracenia*, has many recorded dipterous associates, while *Darlingtonia* has but three. It is also interesting that no mosquito larvae were found in any of the plants, since they are recorded from *Sarracenia*. This study was supported in part by the NIH Training Grant, Department of Entomological Sciences, University of California, Berkeley.—S. L. SZERLIP, *Division of Entomology and Parasitology, University of California, Berkeley, 94720.*

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**Identification of the damsel bugs, *Nabis alternatus* Parshley and *N. americanoferus* Carayon (Heteroptera: Nabidae).**—Harris (1928, Entomol. Am. 9: 1-97) records 6 species of Nabidae from California; 3 of these are extremely rare, and known from only a few specimens. Harris stated that of the 3 common species, *N. ferus* (L.) was European in origin and had been introduced and became widely distributed in the U.S. while *Pagasa fusca* (Stein) and *Nabis alternatus* Parshley were native. However, extensive genitalic studies of North American and European specimens of "*N. ferus*" (Carayon, 1961, Bull. Mus. Nat'l. Hist. Nat. Paris (2) 33: 183-96) have shown the American form, now *N. americanoferus* Carayon, to be distinct from *N. ferus*, which is now thought not to occur in California.

Development of a couplet to separate the two species of *Nabis* resulted from difficulties encountered in rapidly identifying California Nabidae during studies on predatory Hemiptera in Sacramento Valley alfalfa hay fields. Identification using Harris's monograph or the keys of Werner and Butler (1957, Ariz. Agr. Exp. Sta. Tech. Bull. 133: 1-12) proved impractical due to the very similar overall appearance and variable color patterns in our 2 common species of *Nabis*. Also, we would point out that keys and descriptions of "*N. ferus*" in both taxonomic works apply to *N. americanoferus* and not to the true European *N. ferus*. The following couplet was constructed using specimens of Nabidae subsampled from the predation study and identified by experienced Hemipterists. Its accuracy was then confirmed by testing it on identified museum specimens from a wide geographic range. The color pattern of the scutellum is best observed when the specimen is in alcohol. All characters used in the couplet refer to both sexes unless otherwise indicated.

Couplet to separate *Nabis alternatus* and *Nabis americanoferus*.

- Scutellum dark brown with a pale yellow "V" shaped area extending to the posterior margin (Fig. 2) or scutellum yellow except for brownish areas centrally and at the anterior lateral margins (Fig. 1); male clasper (Fig. 5) wide (0.20-0.28 mm) and long (0.52-0.60 mm); body length 7.0-9 mm ..... *N. americanoferus* Carayon
- Scutellum dark brown with two oval yellowish areas, each located mid-laterally (Fig. 3); male clasper (Fig. 4) narrow (0.11-0.16 mm) and short (0.40-0.44 mm); body length 6.4-8.1 mm ..... *Nabis alternatus* Parshley